

## ABSTRACT OF THE DISCLOSURE

The present invention, generally speaking, provides a power-efficient method of driving a switch mode power supply at higher frequencies than those typically attainable in the prior art. In an exemplary embodiment, driver transistors exhibit gate capacitance, which is exploited by charging the gate capacitance using a pulse signal and thereafter allowing the gate capacitance to discharge. With the gate capacitance charged, the driver transistor remains on for the desired period of time even without a drive signal being continuously applied, thus conserving power. In essence, the gate capacitance is exploited in the manner of a memory cell. Furthermore, at higher-frequency operation, instead of the gate capacitance being fully charged, leading to increased turn-off time, the gate capacitance is only partially charged, allowing for quicker turn around. The envelope-following capability of the switch mode power supply, in telecommunications applications, is therefore increased. In accordance with another aspect of the invention, in RF amplification circuit having a phase path and a magnitude path, an amplifier is provided having at least a final stage, the amplifier having an RF input coupled to the phase path; and a switch mode power supply is coupled to an operational voltage and to a power supply input terminal of the amplifier. The switch mode power supply includes a transistor switch, a driver circuit for driving the transistor switch, and a controller, the controller causing the driver circuit to operate in charge transfer mode in which a pulse of short duration relative to a duty cycle of the switch mode power supply is used to turn on the transistor switch.